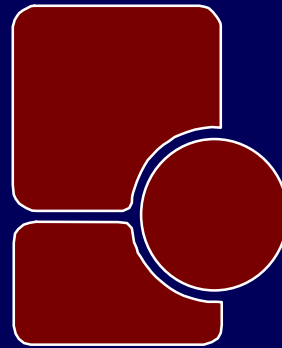


**Joint Legislative Audit and Review Commission
of the Virginia General Assembly**



**Preliminary Planning for
Transportation Studies**

**Staff Briefing
May 14, 2001**

Presentation Outline

2



Introduction and Background

☐ Equity and Efficiency of Highway Funding

☐ Adequacy and Efficiency of Highway Maintenance

Study Mandate

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- In November 2000, the Commission authorized two transportation studies:
 - A review of the equitable allocation of highway funds to the various highway systems and among Virginia localities
 - A review of the efficiency and effectiveness of highway maintenance by VDOT and the localities
- Both studies are to be completed prior to the 2002 Session

Project Staffing

4

■ Equity and Efficiency of Highway Funding

- Hal Greer (Project Leader)
- Anne Oman
- Aris Bearse

■ Adequacy and Efficiency of Highway Maintenance

- Eric Messick (Project Leader)
- Jason Powell
- Scott Demharter

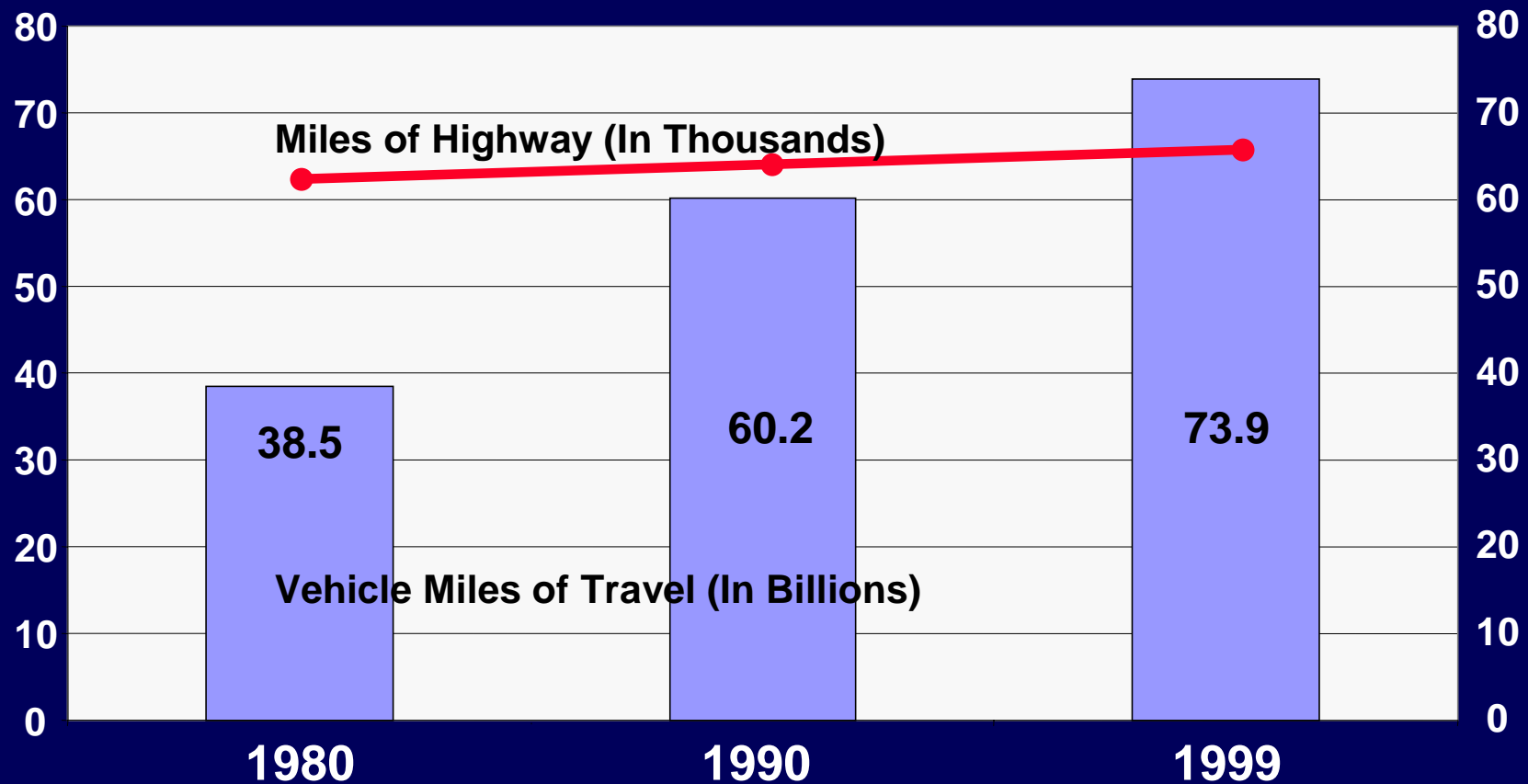
Virginia's Highway System

5

- Virginia has more than 66,770 miles of streets and highways:
 - Interstate – 1,118 miles
 - Primary – 8,005 miles
 - Secondary – 47,138 miles
 - Frontage – 335 miles
 - Urban – 10,141 miles
- Other facilities include 11,787 bridges, 6 tunnels, 4 ferry services, and 41 rest areas

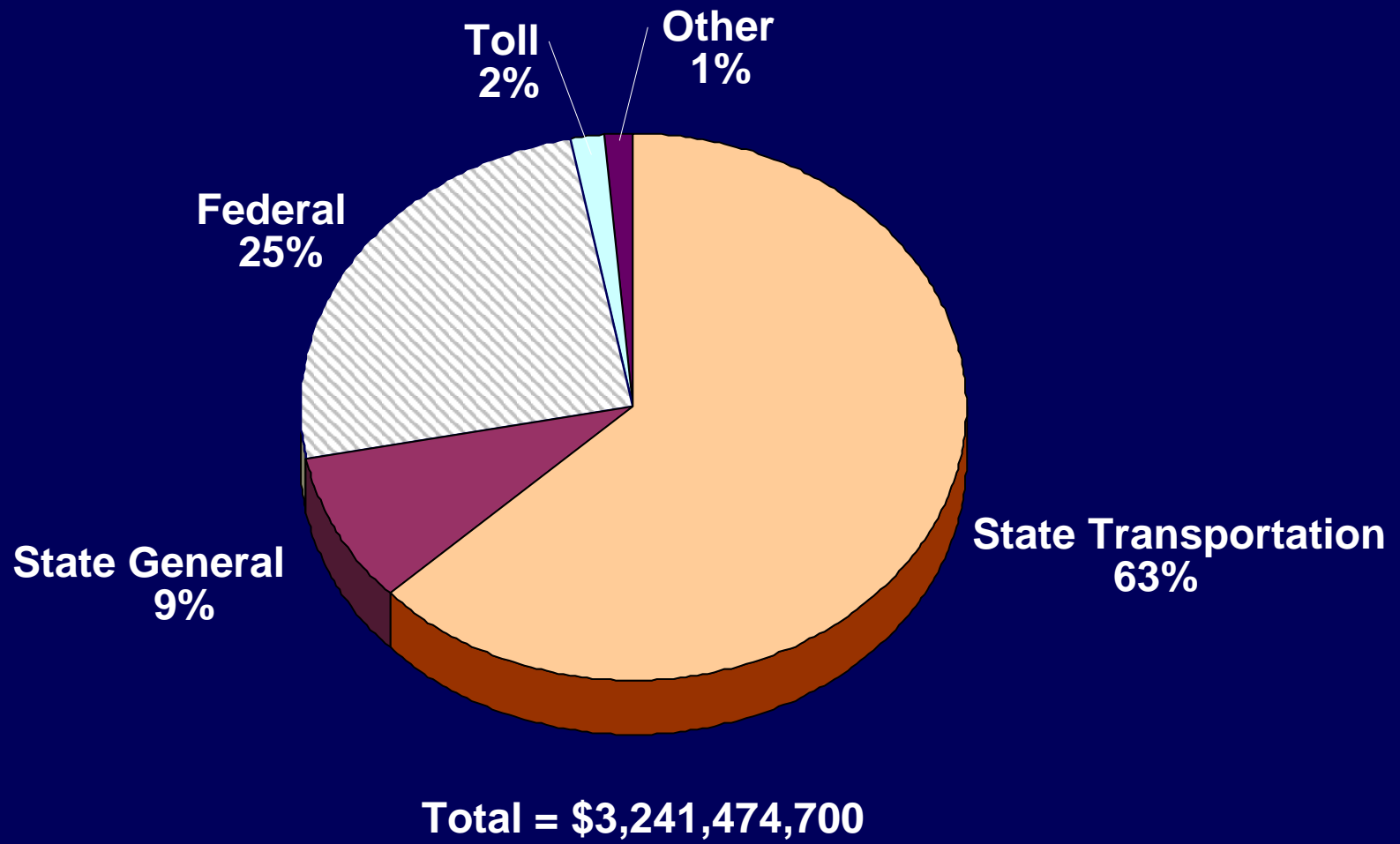
Growth in Travel on Virginia's Highways

6



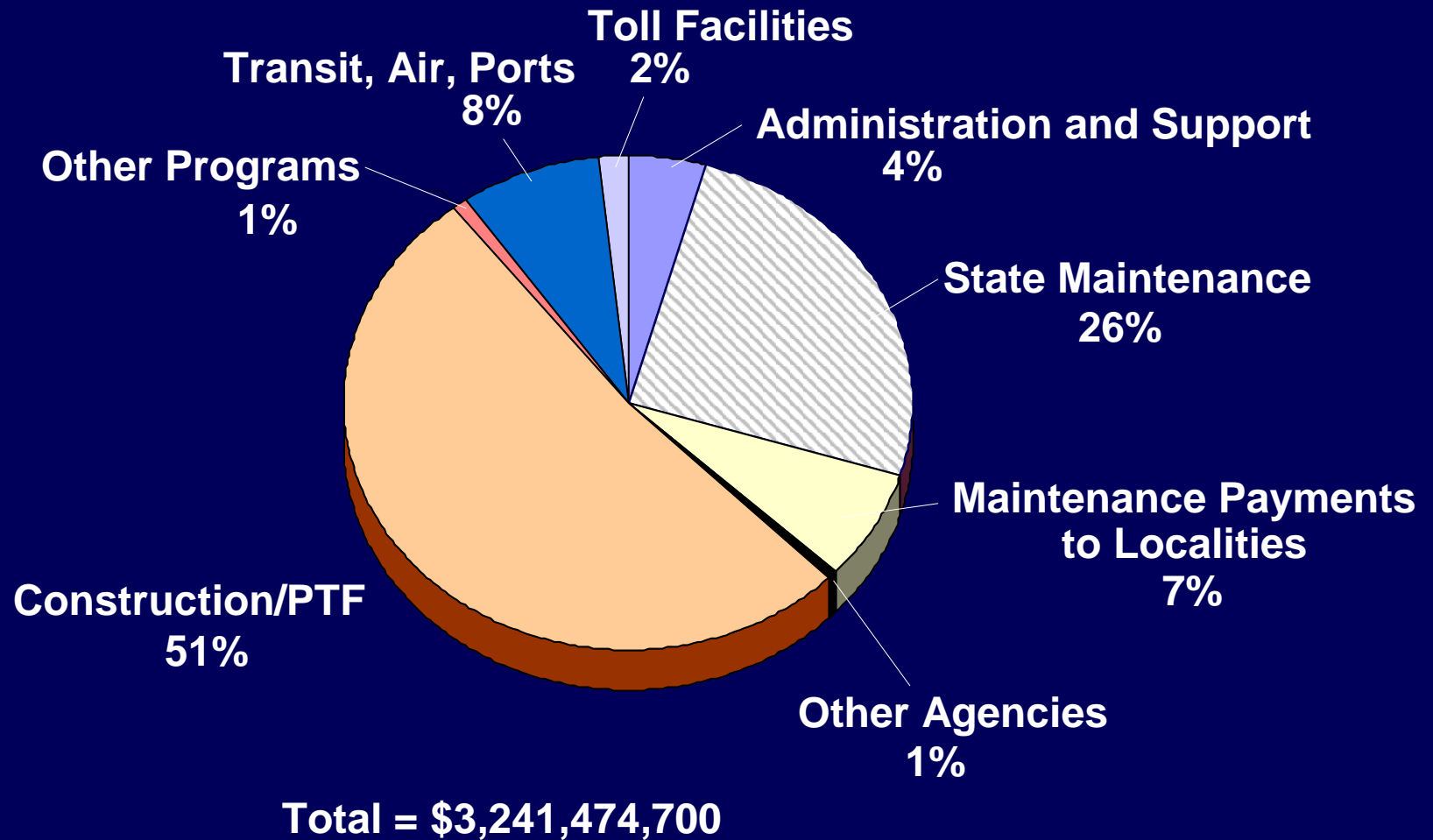
Sources of Revenue for Transportation (FY 2001)

7



Funding for Transportation Programs (FY 2001)

8



Presentation Outline

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- ☐ Introduction
- ☒ **Equity and Efficiency of Highway Funding**
- ☐ Adequacy and Efficiency of Highway Maintenance

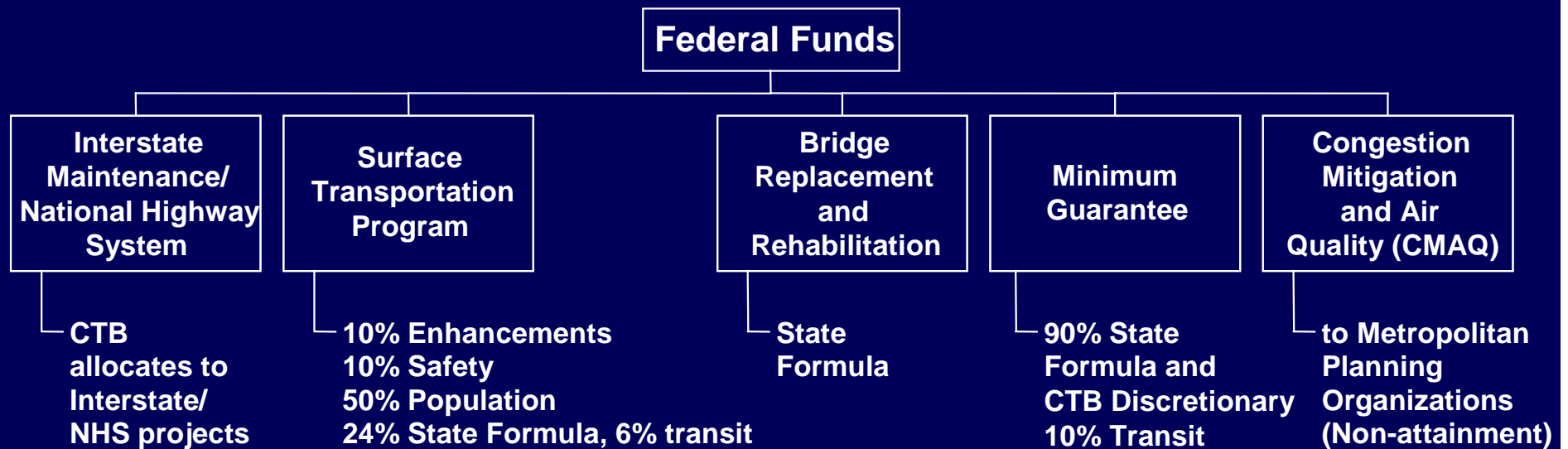
History of Formula Allocations

10

- **State highway allocation formulas last modified as a result of a 1982-1984 JLARC study**
 - **“Equity of Current Provisions for Allocating Highway and Transportation Funds in Virginia”**
- **Formulas have not been updated since 1985**
- **Subsequent studies have indicated a need to modify formulas; none have been acted upon**
 - **SJR 188: “A Study of Transportation Trust Fund Allocation Formulas” (1993)**
 - **“Report of the Advisory Committee on Transportation Needs to the Commission on the Future of Transportation in Virginia” (1997)**

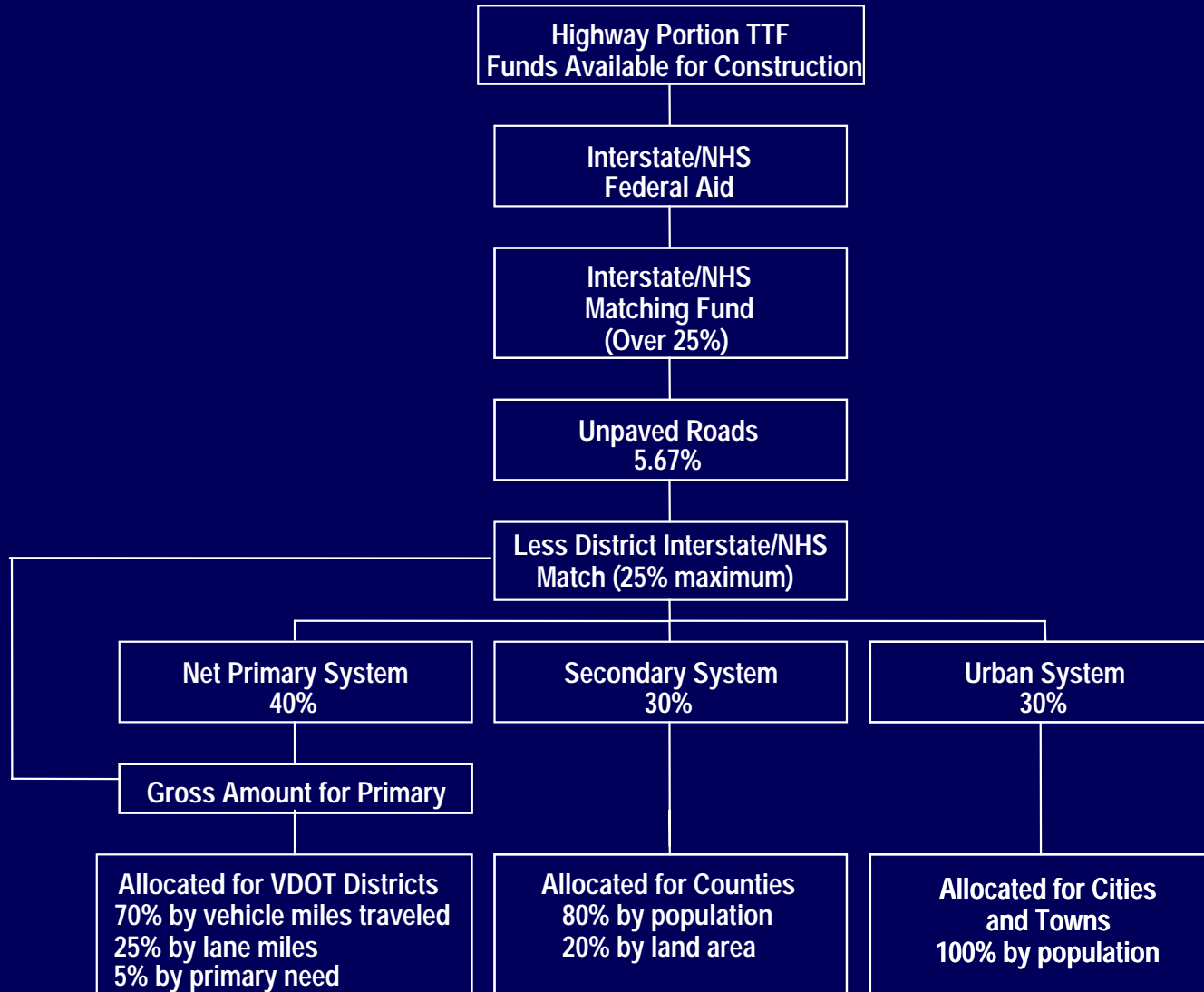
Federal Funds and Requirements

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Transportation Trust Fund Allocations

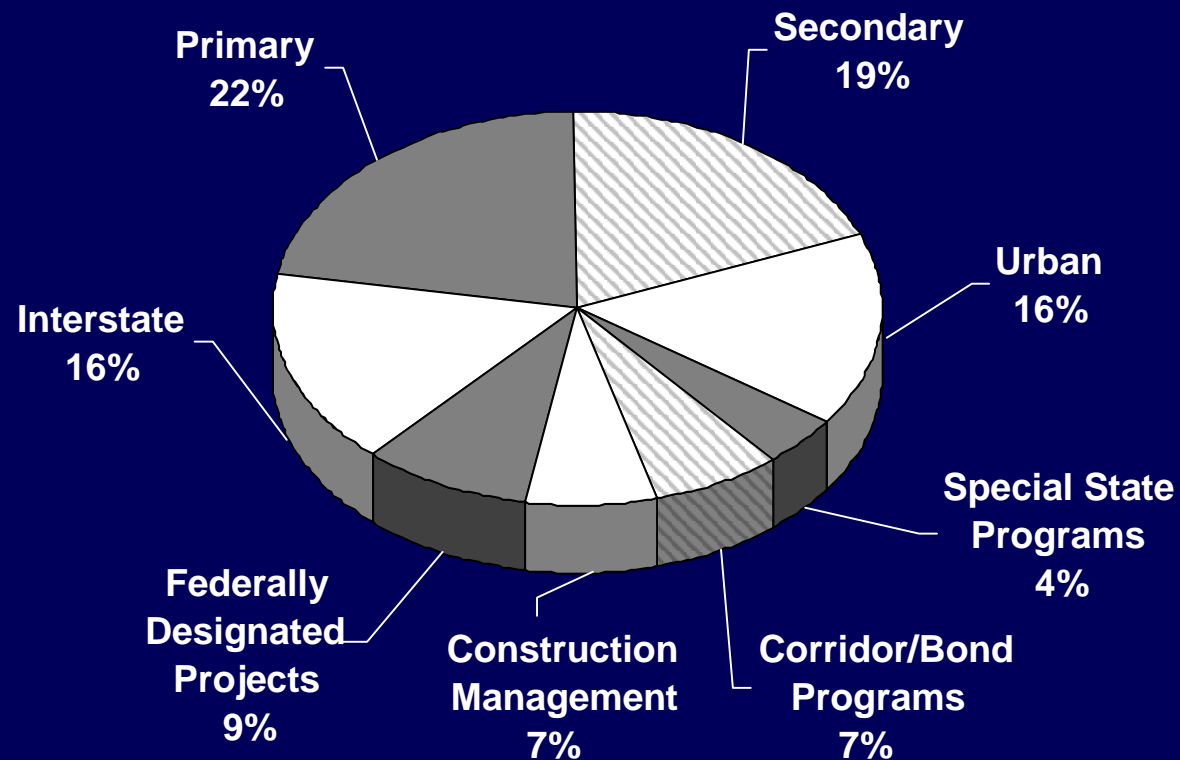
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Highway Construction Allocations for FY 2000

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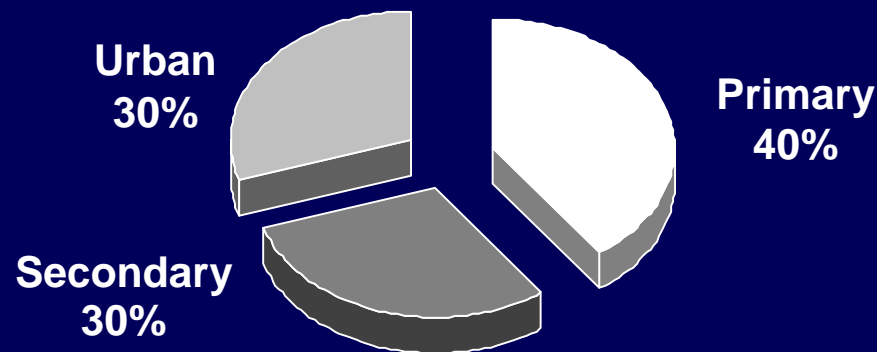
Total Funding: \$1.26 billion



Allocation Across Systems Based on Relative Needs

14

- JLARC recommended in 1982 that the primary, secondary, and urban systems each receive one-third of available construction funds based on VDOT needs assessment
- Legislative compromise reached in 1985 resulted in an overall distribution of construction funds as follows:



Primary, Secondary, and Urban Formulas are Based on Proxies for Need

15

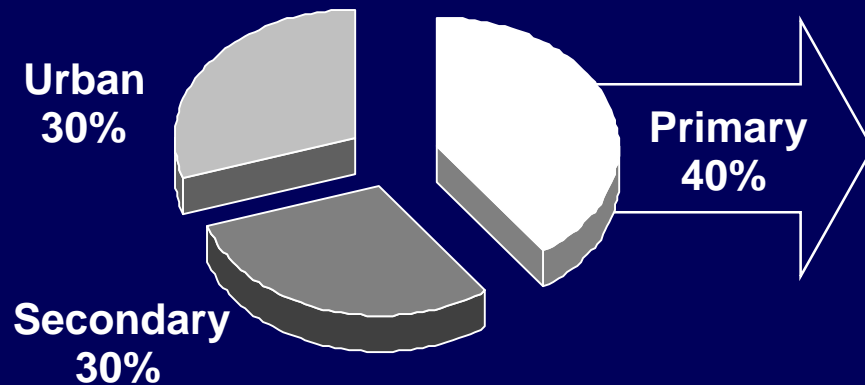
- JLARC conducted study in 1982-1984 to evaluate what factors would best serve as proxies for need in developing formulas to allocate construction funds
 - Factors were tested using regression analysis that relied upon needs assessment data
 - Types of factors tested included measures of demand (vehicle miles of travel, population) and breadth (lane miles, land area) of systems
- Project level needs assessment and regression analysis performed by JLARC served as basis for current allocation formulas
- Subsequent studies indicated the relative distribution of needs has changed over time; formula factors and their corresponding weights may no longer be indicative of current needs

Primary System Formula

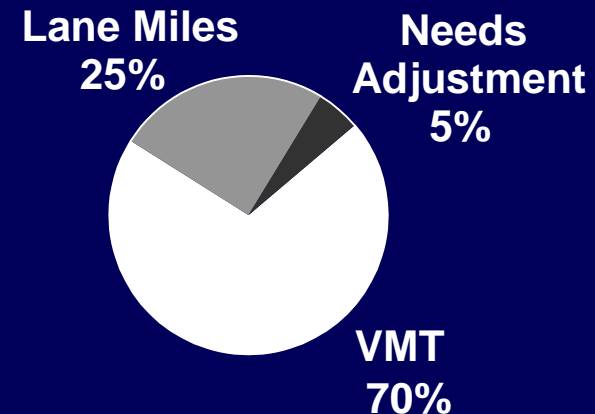
16

- The primary system receives 40 percent of available State construction funds
 - Funds are allocated for the nine VDOT construction districts according to VMT, lane miles, and a needs adjustment factor, as follows:

Available Construction Funds



Allocation for VDOT Districts

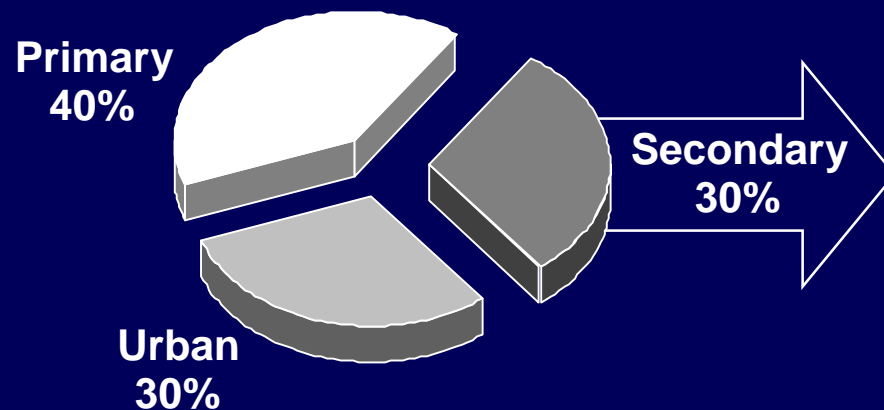


Secondary System Formula

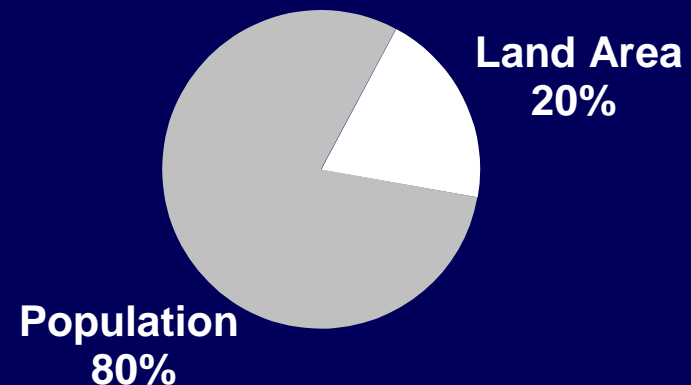
17

- The secondary system receives 30 percent of available State construction funds
 - Funds are allocated for Virginia counties according to population and land area, as follows:

Available Construction Funds



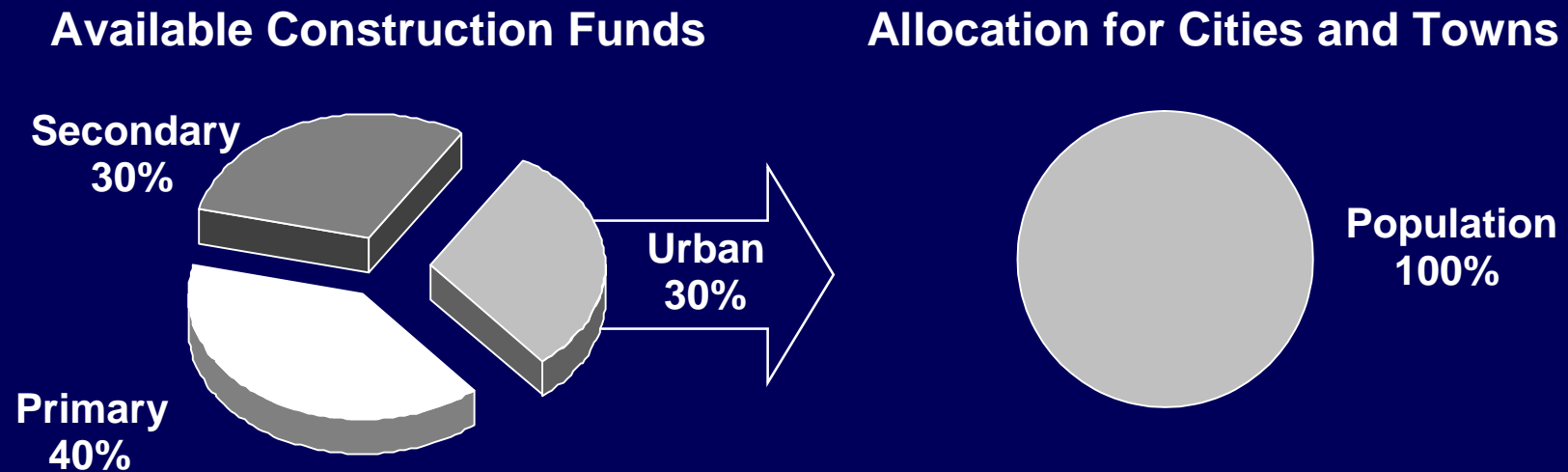
Allocation for Counties



Urban System Formula

18

- The urban system receives the remaining 30 percent of available State construction funds
 - Funds are allocated for Virginia's cities and towns based solely on population



Quinquennial Needs Requirement

19

- In 1985, legislation was enacted that required VDOT to conduct a needs assessment every five years so that the formulas could be updated periodically to reflect changing needs
- 1993 VDOT analysis of formulas based on 1989 needs assessment concluded that formulas needed to be updated, but no adjustments were made
- Legislation enacted during the 2001 Session changes the quinquennial needs assessment requirement and may limit ability to base allocation formulas on needs in the future

Study Issues

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- Should VDOT continue to use a needs-based system for the allocation of highway construction funds, or consider an alternative approach for allocating such funds?
- Does VDOT appropriately define and measure highway construction “needs” for purposes of allocating State highway construction funds?
- Should the current primary, secondary, and urban road classification systems continue to be used to allocate construction funds, and if so, are funds equitably allocated among these road systems and the National Highway System?

Study Issues (continued)

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- **Is the allocation of funding within the primary, secondary, and urban systems equitable?**
- **Are separate bridge and unpaved road funds needed, and if so, what amount should be allocated to such funds?**
- **Is the allocation of funding between maintenance and construction consistent with current and anticipated needs?**

Research Activities

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- Interviews with VDOT staff, Virginia Transportation Research Council staff, and local transportation officials
- Evaluation of VDOT needs assessments
- Evaluation of transportation allocation methods in other states
- Review of transportation literature regarding factors that correlate with transportation need

Research Activities (continued)

23

- **Possible survey of local governments**
- **Collection of data on factors such as population and vehicle miles traveled that may serve as useful proxies for need**
- **Regression analysis using needs data and proxies for need to develop models that may serve as the basis for recommended formula modifications**

Commission Guidance

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- Should the study team address funding of transportation modes other than highways, in particular, transit?
- Are there factors other than need that you would like to see the allocation of highway construction funds based upon?
- Are there other issues that should be addressed in an examination of the allocation of highway funding?

Presentation Outline

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- ☐ Introduction and Background
- ☐ Equity and Efficiency of Highway Funding
- ☒ Adequacy and Efficiency of Highway Maintenance

Statutory Requirements for Highway Maintenance

26

- The *Code of Virginia* defines maintenance as ordinary, replacement, and any other category designated by the Commissioner
- The *Code of Virginia* requires CTB to dedicate an amount deemed “reasonable and necessary” for road maintenance prior to all other funding allocations
- The *Code of Virginia* also establishes criteria for payments for maintenance purposes to the cities, certain towns, and the counties of Arlington and Henrico

Highway Maintenance and Operations Functions Provided by VDOT

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- Traditional maintenance functions include:
 - Ordinary Maintenance
 - Maintenance Replacement
 - Operations
- VDOT is developing new classifications for maintenance functions:
 - Preventative
 - Restorative
 - Rehabilitative

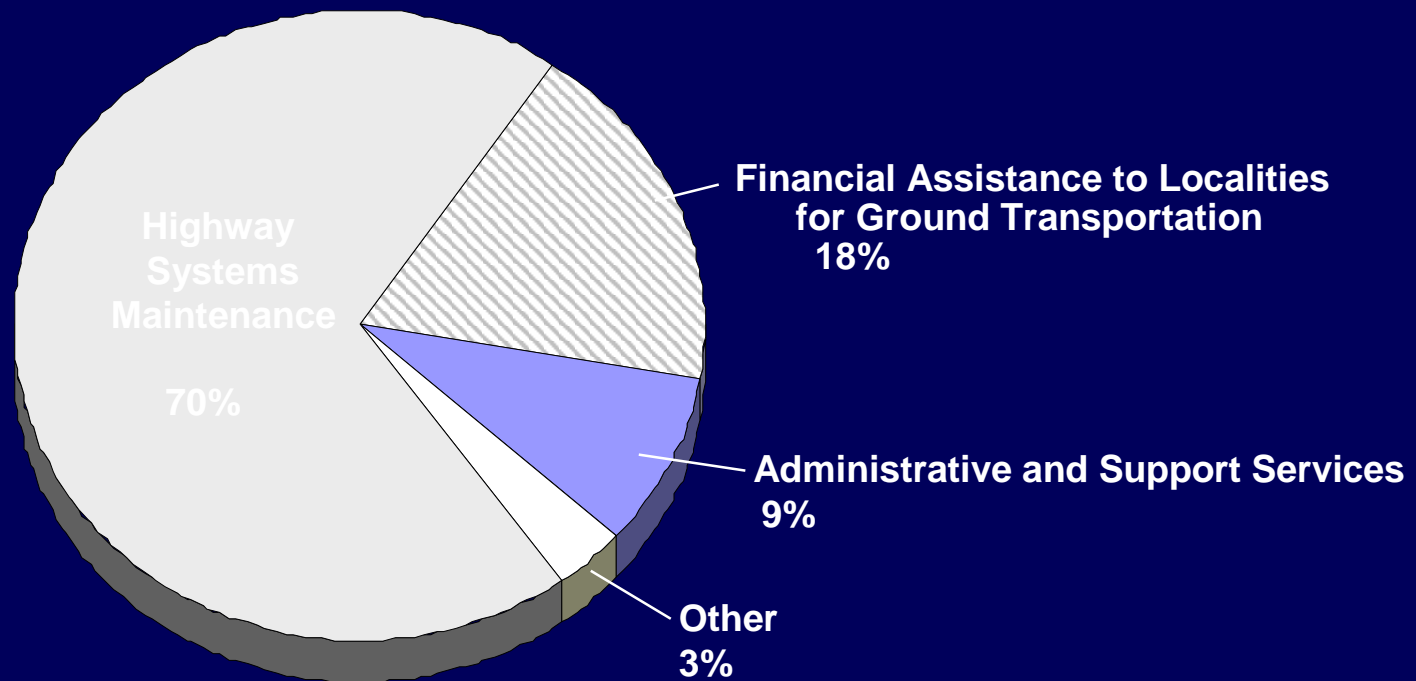
Implementation of Asset Management

28

- **An outcome-based approach to maintenance**
 - Monitors the condition of highway assets
 - Optimizes the preservation, upgrading, and timely replacement of highway assets through cost effective performance management and cost allocation
- **VDOT conducted statewide highway asset inventory in the early 1980s**
- **Provision of highway maintenance activities will remain the same**
- **Full implementation of asset management is expected to occur by 2006**

Funding for Highway Maintenance and Operations, FY 2001

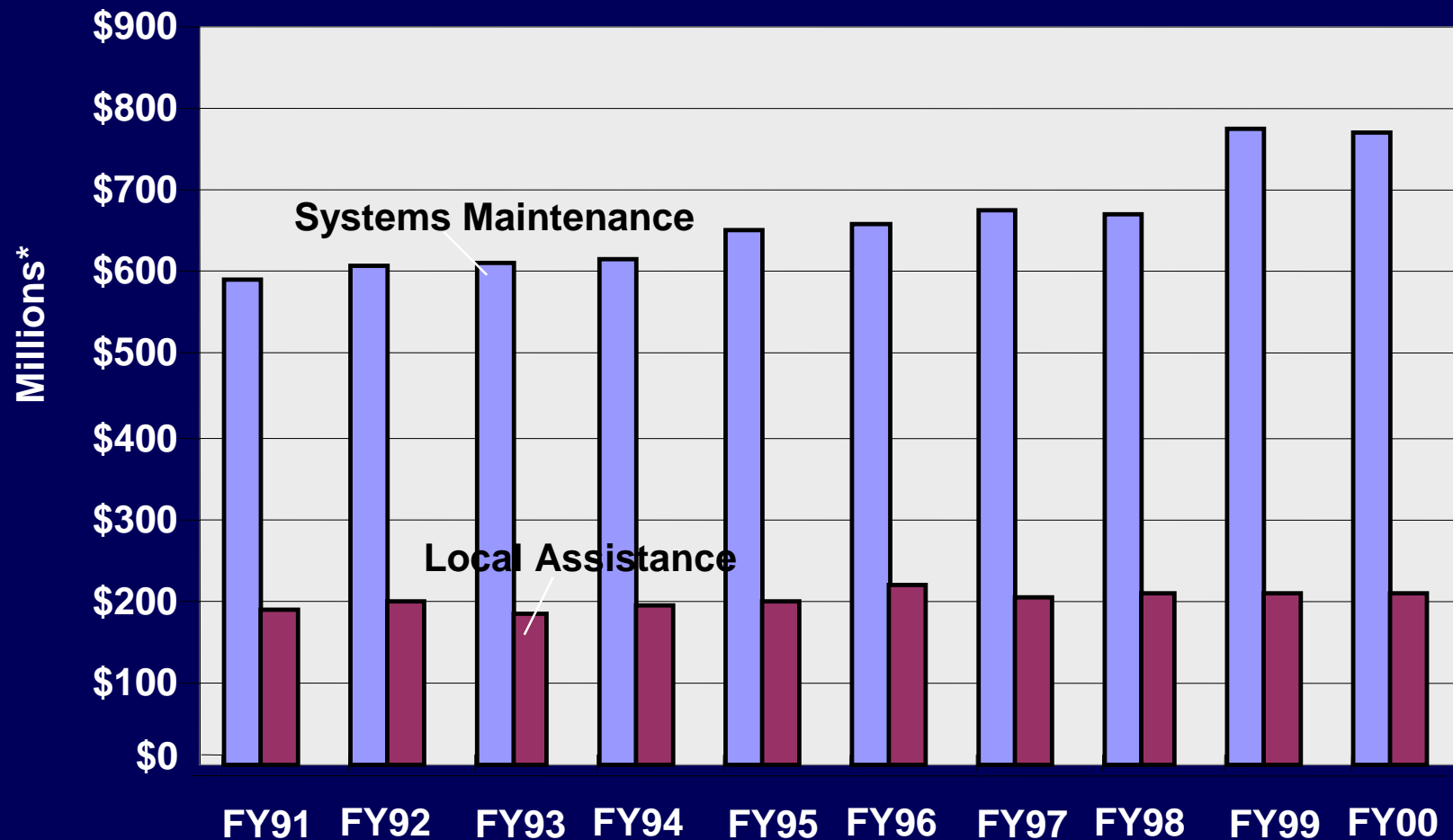
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Total = \$1,180,401,562

Appropriations for Highway Systems Maintenance and Financial Assistance to Localities FY 1991 – FY 2000

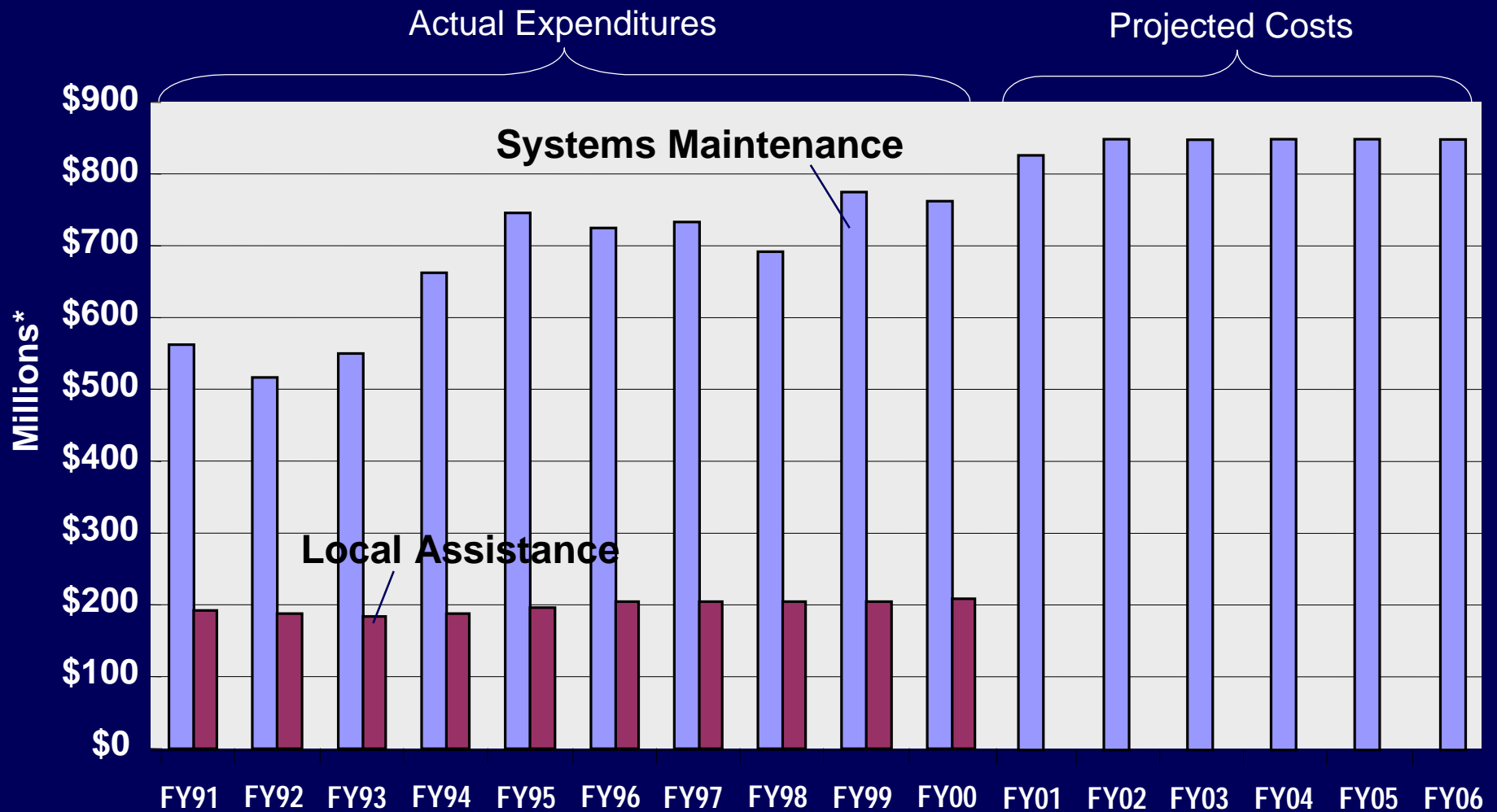
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*Adjusted for Inflation in 2000 dollars

Actual and Projected Expenditures for Highway Systems Maintenance and Financial Assistance to Localities FY 1991 – FY 2006

31



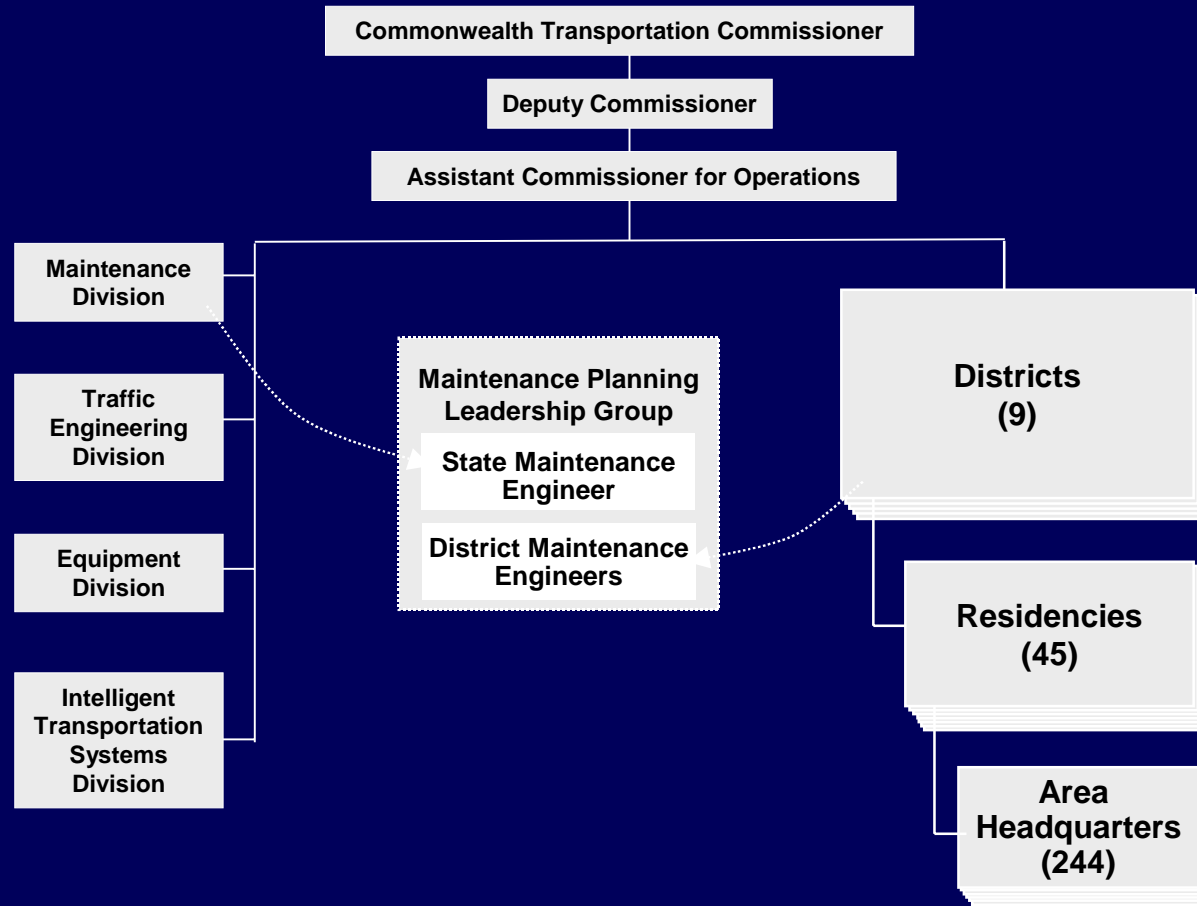
*Adjusted for Inflation in 2000 dollars

Current Quality of Roads and Bridges in Virginia's Highway System

32

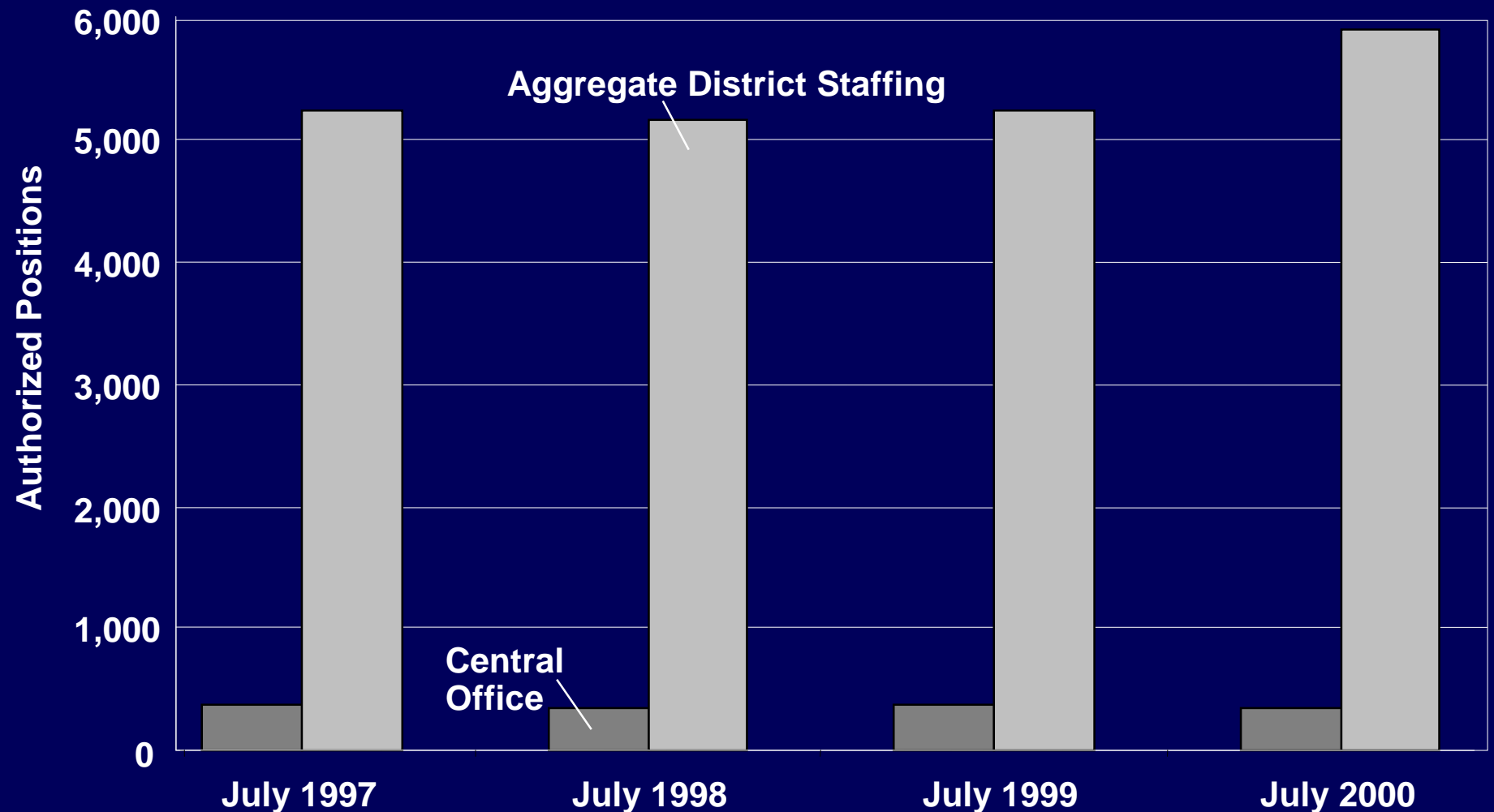
- Overall road smoothness on the Interstates appears to be good based on the International Roughness Index as developed by FHWA
 - For 1999, approximately 68 percent of Virginia's Interstate roads were rated in the two best smoothness categories -- The nationwide average during that period was less than 61 percent
- In August 2000, approximately 28 percent of the State's bridges were structurally deficient or functionally obsolete based on ratings established by FHWA
 - Nationally, about 29 percent of all bridges were rated as structurally deficient or functionally obsolete as of August 2000
- Concerns have been expressed that the quality of secondary and urban roads is deteriorating partly as a result of the increased vehicle trips beyond the design capacities of these roads

Organizational Structure of VDOT's Maintenance Program



Staffing Levels for the VDOT Maintenance and Operations Program

34



Study Issues

35

- What is the current quality of Virginia's road system?
- Is the maintenance program adequately funded to meet the maintenance needs of the State's highway system?
- Is the maintenance program effectively managed, organized, and staffed in order to provide adequate highway maintenance?

Study Issues (continued)

36

- **What level of productivity have State and non-state forces achieved in terms of highway maintenance functions given the available resources?**
- **How would the implementation of an asset management approach impact the department's ability to provide highway maintenance?**
- **What is the current status of maintenance performed by the cities, towns, and the counties of Arlington and Henrico?**

Research Activities

37

- Interviews with VDOT maintenance and operations program staff at the central, district, residency, and area levels; representatives from local road maintenance programs; all district maintenance engineers; and private contractors
- Surveys of VDOT field staff
- Site visits to all districts as well as selected residencies and area headquarters
- Analysis of statewide road quality by system type
- Analysis of productivity levels for State and non-state forces performing maintenance activities
- Review of selected other state highway maintenance programs

Commission Guidance

38

- With what level of detail should the project team review the maintenance programs operating in cities, towns, and the counties of Arlington and Henrico?
- Are there other issues that should be addressed as part of the review of highway maintenance?